



**HIGHLY STRENGTHENED GEAR**

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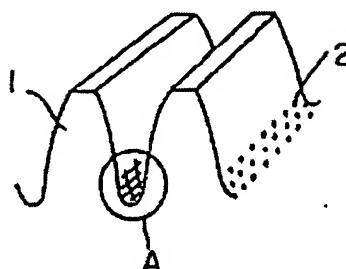
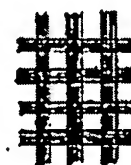
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**Abstract of JP2138554**

**PURPOSE:** To make a gear excellent in quality and high in strength by controlling the depth of an effective hardened layers of a root circle section and root circle corner radius section to be less than the specified percent of the effective hardened layer of a tooth surface on a pitch circle in the gear which is sintered or processed by nitride sintering.

**CONSTITUTION:** After a raw material for a gear has been processed by normal gas sintering or nitric sintering, for example, in a state that the material is in a round bar form, tooth forging is processed so as to let it be a gear raw material when it is hot or warm while remaining heat is being utilized, then, it is immersed in a neutral salt bath which is maintained at a hardening temperature (for example, 840 deg.C) so that it is hardened in oil (for example, 80 deg.C) thereafter. In this case, the depth of an effective hardened layers of a root circle section and a root circle corner radius section is controlled to be less than eighty percent of the depth of an effective hardened layer of a tooth surface on a pitch circle by a step of changing both the depth of the layer of sintering or nitride sintering of the raw material in a round bar form and a working rate at the time of tooth forging. By this constitution, a highly strengthened gear of high quality can thereby be obtained, the tooth surface of which is free of the occurrence of depression and pitching and/or spalling owing to surface fatigue.

**FIG. 6 (a)****FIG. 6 (b)**

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